CLAIMS

1. A process for the generation, in a given direction of emission, of radiation in a desired range of wavelengths, where the said process includes:

- the production of initial radiation by a radiation source whose wavelengths include the said desired range,
- filtering of the said initial radiation, so as to substantially eliminate the beams of the initial radiation whose wavelength is outside the said desired range,

characterised in that the said filtration is effected by introducing a controlled distribution of the refraction index of the beams in a control region that is traversed by the initial radiation, so as to selectively deflect the beams of the initial radiation according to their wavelength, and to recover the beams of a desired wavelength.

2. A process according to the preceding claim, characterised in that the said controlled distribution of the refraction index of the beams is obtained by controlling the electron density distribution in the said control region.

3. A process according to the preceding claim, characterised in that the said control region is located in a plasma.

4. A process according to the preceding claim, characterised in that the said plasma containing the said control region is itself contained in a chamber associated with the said radiation source.

5. A process according to one of the two preceding claims, characterised in that electron density control is

effected so as to obtain an electron density which is greater at a distance from a median initial radiation emission line than it is on the said median initial radiation emission line.

6. A process according to the preceding claim, characterised in that the said median initial radiation emission line is a straight initial radiation line, and the said initial radiation is produced by the said radiation source with a more or less axi-symmetrical distribution around the said straight initial radiation line.

7. A process according to the preceding claim, characterised in that, in order to obtain the said electron density distribution, an input of energy is applied to the said plasma along the said median emission line of the initial radiation.

8. A process according to the preceding claim, characterised in that the said input of energy is effected by ionisation of the plasma along the said median emission line of the initial radiation.

9. A process according to the preceding claim, characterised in that, to effect the said ionisation, the following operations are required:

- establishment of an electric voltage at the terminals of the chamber containing the plasma, the said terminals being spaced according to the direction generally defined by the said median emission line of the initial radiation,
- application of an energy beam to the said median initial radiation emission line.

10. A process according to one of the preceding claims, characterised in that, in order to recover the beams of a desired wavelength, there is at least one window downstream of the said control region to selectively pass beams in the desired wavelength range.

11. A process according to the preceding claim, characterised in that each window is positioned on the said median initial radiation emission line, with a curvilinear abscissa corresponding to the place of intersection of the said beams in the desired wavelength range which were deflected with the said median initial radiation emission line.

12. A process according to one of the preceding claims, characterised in that the said desired range of wavelengths falls within the interval [0-100 nm].

13. A process according to the preceding claim, characterised in that the said desired range of wavelengths falls within the EUV spectrum.

14. A device for the generation of radiation in a desired range of wavelengths, in a given direction of emission, where the said device includes:

- a source of initial radiation whose wavelengths include the said desired range,
- filtering resources of the said initial radiation, so as to substantially eliminate the beams of initial radiation whose wavelength is outside the said desired range,

characterised in that the said filtering resources include the means to introduce a controlled distribution of the refraction index of the beams in a control region that is

traversed by the initial radiation, so as to selectively deflect the beams of the initial radiation according to their wavelength, and to recover the beams of a desired wavelength.

15. A device according to the preceding claim, characterised in that the said means to introduce a controlled distribution of the refraction index includes resources to control the electron density distribution in the said control region.

16. A device according to the preceding claim, characterised in that the said control region is located in a plasma.

17. A device according to the preceding claim, characterised in that the said plasma containing the said control region is itself contained in a chamber associated with the said radiation source.

18. A device according to one of the two preceding claims, characterised in that the said resources to control the electron density distribution are capable of achieving an electron density which is greater at a distance from a median initial radiation emission line than it is on the said median initial radiation emission line.

19. A device according to the preceding claim, characterised in that the said median initial radiation emission line is a straight initial radiation line, and the said resources to control the electron density distribution are capable of achieving an electron density that is more or less axi-symmetrical around the said straight initial radiation line.

20. A device according to the preceding claim, characterised in that the said resources to control the electron density distribution include resources for injecting energy into the said plasma along the said median initial radiation emission line.

21. A device according to the preceding claim, characterised in that the said resources for injecting energy includes resources for ionisation of the plasma along the said median initial radiation emission line.

22. A device according to the preceding claim, characterised in that the said resources for injecting energy includes resources to:

- establish an electric voltage at the terminals of the chamber containing the plasma, the said terminals being spaced in the general direction defined by the said median initial radiation emission line,
- apply an energy beam to said median initial radiation emission line.

23. A device according to one of the nine preceding claims, characterised in that the device includes, downstream of the said control region, at least one window to selectively pass beams in the desired wavelength range.

24. A device according to the preceding claim, characterised in that each window is positioned on the said median initial radiation emission line, with a curvilinear abscissa corresponding to the place of intersection of the said beams in the desired wavelength range which were

deflected with the said median initial radiation emission line.

25. A device according to one of the two preceding claims, characterised in that the device includes an additional multi-layer filtration mirror in association with at least some windows.

26. A device according to the preceding claim, characterised in that the device includes a multiplicity of modules which each include a source of initial radiation and associated filtering resources, as well as an optical resource that can be used to collect the radiation subjected to filtration, in order to re-direct it outside of the device.

27. A device according to the preceding claim, characterised in that the said optical resource is a multi-layer mirror which is also capable of finalising filtration of the said radiation.

28. A device according to one of the fourteen preceding claims, characterised in that the said desired range of wavelengths falls within the interval [0-100 nm].

29. A device according to the preceding claim, characterised in that the said desired range of wavelengths falls within the EUV spectrum.

30. A lithography device that includes a generation device according to one of the sixteen preceding claims.